

# New York State Maternal Mortality and Morbidity

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#### **Presentation Overview**

#### Surveillance

- Maternal Mortality Review (MMR) in New York State (NYS)
  - Maternal mortality
  - Severe maternal morbidity
  - Disparities

#### Action

- Guideline summary and resource development
- New York State Perinatal Quality Collaborative (NYSPQC)
- Promoting well woman care
  - Partnership for Maternal Health (PMH) Campaign
  - NYS Infant Mortality Collaborative Improvement & Innovation Network
- Perinatal regionalization
- Maternal Mortality Review Board
- Governor Cuomo's comprehensive initiative



# **Surveillance**



## **Maternal Mortality**

- US ranks 47<sup>th</sup> in the world behind all other developed nations in maternal mortality
- 2010: NY ranks 46<sup>th</sup> among 50 states with a rate of 18.9

Center, N.W.s.L., Health Care Making the Grade on Women's Health: A National and State by State Report Card. 2010.

Available from: <a href="http://hrc.nwlc.org/status-indicators/maternal-mortality-rate-100000">http://hrc.nwlc.org/status-indicators/maternal-mortality-rate-100000</a>

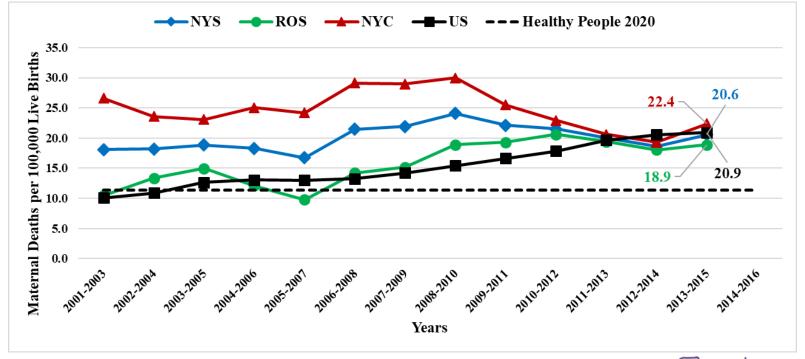
2016: NY ranks 30<sup>th</sup> with a rate of 20.9

Explore Maternal Mortality in New York | 2016 Health of Women and Children Report. 2017;

Available from: http://www.americashealthrankings.org/explore/2016-health-of-women-and-children-report/measure/maternal\_mortality/state/NY.



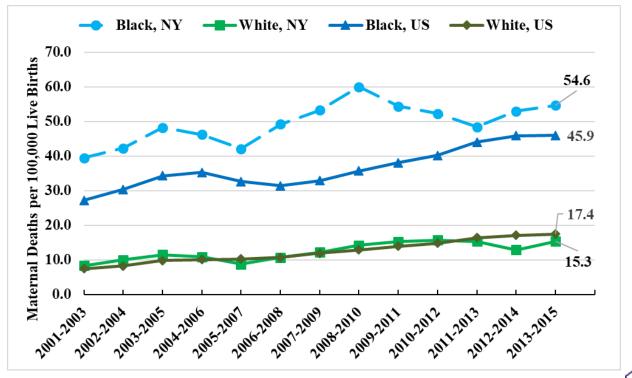
#### Trends in Maternal Mortality as Reported in Vital Records\*





<sup>\*</sup>Causes of death from death records A34, O00-O95,O98-O99. 2000-2014 data from NY Vital Records. 2015 NY and national data from CDC Wonder database.

# Trends in Maternal Mortality as Reported in Vital Records\* by Race



<sup>\*</sup>Causes of death from death records A34, O00-O95,O98-O99.

National maternal mortality trends derived from CDC Wonder Database available at https://wonder.cdc.gov/



## **Maternal Mortality Disparities in NYS**

Racial disparities in maternal deaths are significant

- The Black to White mortality ratio peaked in 2006 at 6 to 1
- Decreased to 5 to 1 in 2009
- Continued to decrease to reach 3.4 to 1 in 2013
- Decreased to 2.8 to 1 in 2015



### **Maternal Mortality Review Initiative**

Convened a multidisciplinary committee in 2010

Comprehensive population based examination of maternal mortality

 Recommendations for focus and participation in education, developing materials, and quality improvement

#### **MMR Case Identification**

#### Standard surveillance

 Review of female deaths linked to a live birth with a year or less between the two events

#### Enhanced surveillance

- Examination of female death records not linked to a live birth certificate
  - That occurred within a year after a hospitalization with an indication of pregnancy
  - OR with an obstetric cause of death or pregnancy indicated on death certificate

New York Patient Occurrence Reporting and Tracking System (NYPORTS)



## **Maternal Mortality in New York State**

#### What changed over time in maternal mortality:

- Black and White mothers contribute equally to the pregnancy-related cohort
  - 17% of live births are born to Black mothers
- An increasing majority of pregnancy-related deaths were covered by Medicaid
- Fewer pregnancy-related deaths due to hypertensive disorders
- Injury (substance abuse and suicide) is the leading cause of death among pregnancy-associated not related deaths

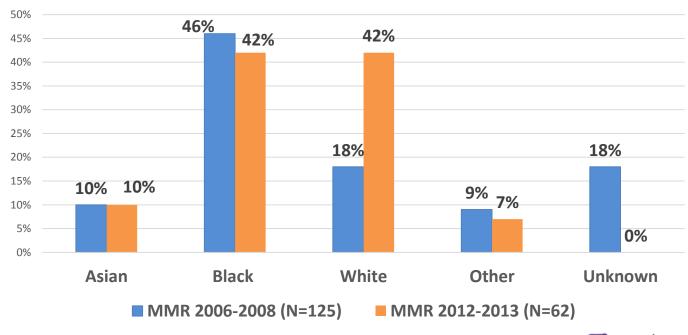


# Prenatally-Identified Risk Factors Pregnancy-related Deaths

Dick Factors	Percent of women with the risk factor		
Risk Factors	2006-2008 n=125	2012-2013 n=62	
Hematologic	29 (23%)	16 (26%)	
Cardiac	20 (16%)	11(18%)	
Hypertension	26 (21%)	11 (18%)	
Pulmonary	13 (10%)	11 (18%)	
Endocrine	12 (10%)	10 (16%)	
Psychiatric disorder	8 (6%)	7 (11%)	

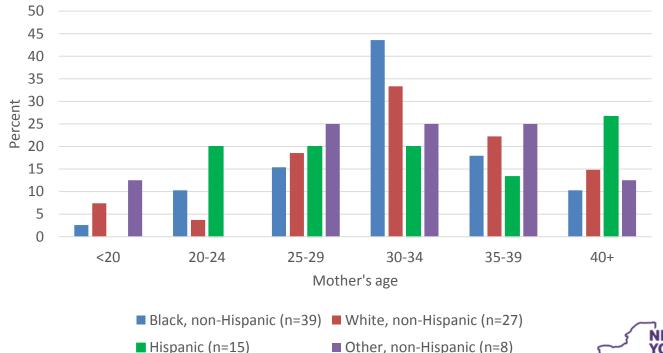


# Pregnancy-Related Deaths by Race 2006-2008 and 2012-2013





# Pregnancy-Related Deaths Race/Ethnicity by Mother's Age 2012-2014\*





# Pregnancy-Related Deaths by Pre-Pregnancy Weight Status, 2006-2008 and 2012-2014\*

- Unhealthy pre-pregnancy weight status
  - Obese, BMI≥ 30

2006-2008: 30% (n=38)

2012-2014: 51% (n=45)



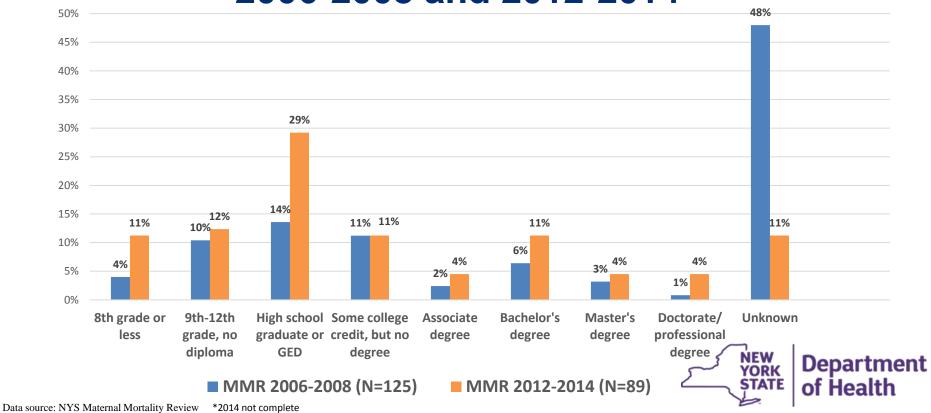
# Pregnancy-Related Deaths by Pre-Pregnancy Weight Status and Race/Ethnicity, 2012-2013

Pre- Pregnancy BMI	Total	White, Non- Hispanic	Black, Non- Hispanic	Hispanic	Other
Thin	1 (2%)	1	0	0	0
Normal	10 (16%)	2	5	3	0
Overweight	6 (10%)	3	0	2	1
Obese	22 (35%)	3	18	1	0
Unknown	23 (37%)	9	3	5	6
Total	62 (100%)	18	26	11	7

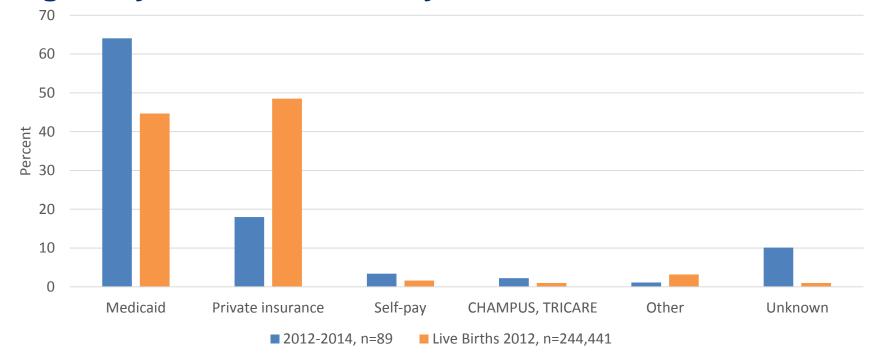
Data source: NYS Maternal Mortality Review



# Pregnancy-Related Deaths by Education 2006-2008 and 2012-2014\*



#### **Pregnancy-Related Deaths by Health Insurance, 2012–2014\***



Data source: NYS Maternal Mortality Review



## **Maternal Demographics**

	2006-2008	2012-2014*
Primary Language: English	63%	69%
Marital Status: Single Married	48% 48%	53% 44%
Insurance: Medicaid	45%	64%
Parity: First time mothers One previous live birth 2 or more previous births Unknown	30% 26% 33% 12%	30% 17% 37% 16%

Data source: NYS Maternal Mortality Review



### **Prenatal History**

<b>Prenatal</b>	coro	1.1411	ization
Prenatai	Care	uu	ızalıon

Adequate prenatal care

Intermediate

Intensive

Inadequate

No prenatal care

Unknown

25%

27% 25%

6% 8%

10% 4%

24% 29%

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30%

6%

6%

Data source: NYS Maternal Mortality Review \*2014 not complete

### Prenatal History by Race/Ethnicity, 2012-2014\*

Prenatal Care Utilization	Total 2012-2014 (n=89)	Black, non- Hispanic (n=39)	White, non- Hispanic (n=27)	Hispanic (n=15)	Other, non- Hispanic (n=8)
Adequate prenatal care	30%	33%	19%	60%	0%
Intermediate	25%	31%	22%	13%	38%
Intensive	4%	3%	11%	0%	0%
Inadequate	6%	10%	0%	0%	12%
No prenatal care	4%	3%	7%	7%	0%
Unknown	29%	21%	41%	20%	50%
Total	100%	100%	100%	100%	100%

of Health

Data source: NYS Maternal Mortality Review

## **Timing of Death**

Most of the pregnancy-related deaths occurred within a week of the end of the pregnancy.

2006-2008: 92/125, 74% 2012-2014: 58/89, 65%

	2006-2008	2012-2014*
Antepartum	15 (12%)	12 (13%)
During labor or delivery	11 (9%)	3 (3%)
Within a day of delivery	40 (32%)	27 (30%)
First week after delivery	27 (22%)	16 (18%)
1-6 weeks postpartum	25 (20%)	16 (18%)
43 days to 1 year	7 (6%)	13 (15%)

Data source: NYS Maternal Mortality Review \*2014 not complete

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of Health

## **Intrapartum Medical History**

	2006-2008	2012-2014*
Hospital of delivery or TOP: Level 3	46%	28%
Regional Perinatal Center	30%	36%
Type of Delivery:		
C-Sections:	63%	66%
Emergent	32%	34%
Unscheduled non-emergent	14%	13%
Elective scheduled	10%	12%
Peri or postmortem	7%	7%
Normal spontaneous vaginal deliveries	17%	19%
Undelivered	12%	7%
Other	6%	8%

Data source: NYS Maternal Mortality Review

#### **Cause of Death by Maternal Mortality Review Cohort**

Cause of Death	2006-2008 % (n) (N=125)	2012-2014* % (n) (N=89)
Hemorrhage	23% (n=29)	16% (n=14)
Hypertensive disorders	23% (n=29)	7% (n=6)
Embolism (not cerebral)	17% (n=21)	25% (n=22)
Cardiovascular conditions	10% (n=12)	7% (n=6)
Infection	3% (n=4)	17% (n=15)
Cardiomyopathy	2% (n=2)	11% (n=10)

Data source: NYS Maternal Mortality Review



### **Cause of Death by Maternal Mortality Review Cohort**

Cause of Death	2006-2008 % (n) (N=125)	2012-2014* % (n) (N=89)
Cardiac arrest/failure	3% (n=4)	2% (n=2)
Hematopoietic (sickle cell, thalassemia, ITP)	2% (n=3)	2% (n=2)
Intracerebral hemorrhage (not associated with PIH)	4% (n=5)	5% (n=4)
Pulmonary problems	2% (n=3)	3% (n=3)
Neurologic/neurovascular problems	2% (n=3)	3% (n=3)
Other	8% (n=10)	2% (n=2)

#### Cause of Death by Race/Ethnicity, 2012-2014\*

Cause of Death	Total	White, Non- Hispanic	Black, Non- Hispanic	Hispanic	Other
Embolism	22(25%)	6	10	3	3
Hemorrhage	14 (16%)	4	4	3	3
Infection	15 (17%)	6	5	3	1
Cardiomyopathy	10 (11%)	4	4	2	0
Hypertensive disorders	6 (7%)	2	4	0	0
Cardiovascular problems	6 (7%)	0	3	2	1
Cardiac arrest	2( 2%)	0	1	1	0
Hematopoietic	2 (2%)	0	2	0	0

Data source: NYS Maternal Mortality Review



#### Cause of Death by Race/Ethnicity, 2012-2014\*

Cause of Death	Total	White, Non- Hispanic	Black, Non- Hispanic	Hispanic	Other
Intracerebral Hemorrhage	4 (4%)	3	1	0	0
Pulmonary Problems	3 (3%)	0	3	0	0
Neurological	3 (3%)	2	0	1	0
Other	2 (2%)	0	2	0	0
Total	89 (100%)	27	39	15	8

Data source: NYS Maternal Mortality Review



# Provider-Identified Prenatal Risk Factors Pregnancy-Related Deaths

Number of risk factors (%)	Number of cases 2006-2008 (%)	Number of cases 2012-2013 (%)
0	45 (36%)	9 (14.5%)
1	40 (32%)	18 (29.0%)
2	23 (18%)	15 (24.2%)
3 or more	8 (14%)	20 (32.3%)



#### Causes of Death Among Pregnancy-Associated Deaths by Race/Ethnicity 2012-2014\*

	Total	White, non- Hispanic	Black, non- Hispanic	Hispanic	Other, non- Hispanic
Injury	77 (52%)	40	15	11	11
Cancer	14 (10%)	8	3	3	0
Infection	7 (5%)	3	2	1	1
Cardiac arrhythmia	8 (5%)	5	3	0	0
Unknown	6 (4%)	2	2	2	0
Pulmonary problems	8 (5%)	1	5	1	1
Cardiomyopathy	3 (2%)	0	3	0	0
Cardiovascular problems	4 (3%)	1	2	1	0
Other	20 (14%)	10	5	4	1
Total	147 (100%)	70	10	23	14
Data source: NYS Maternal Mortality Review *2014 not complete					

# Pregnancy-Associated Deaths by Race/Ethnicity – Injury 2012-2014\*

	Total	White, non- Hispanic	Black, non- Hispanic	Hispanic	Other, non- Hispanic
Substance Abuse	23 (30%)	19	1	2	1
Suicide	13 (17%)	5	2	2	4
MVA	17 (22%)	10	2	3	2
Homicide	15 (15%)	1	7	4	3
Undetermined injury	9 (12%)	5	3	0	1
Total	77 (100%)	40	15	11	11

Data source: NYS Maternal Mortality Review



## **Maternal Mortality in New York State**

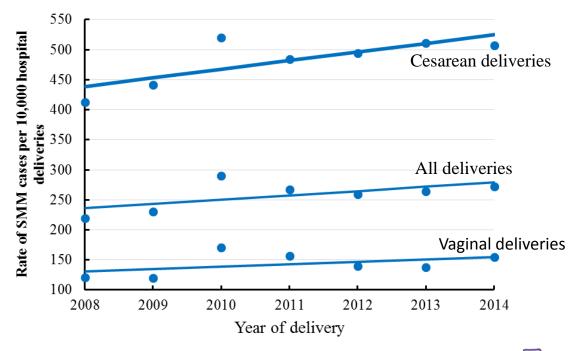
Pregnancy-related deaths	NYS MMR 2006-2008	NYS MMR 2012-2014*
Race disparities: Deaths per 100,000 live births	48.9 Black 14.5 Hispanic 6.9 White	34.0 Black 9.0 Hispanic 6.6 White
Pre-pregnancy weight: overweight or obese	15% overweight 30% obese	9% overweight 51% obese
Low Income	45% Medicaid	64% Medicaid
Method of delivery: C-section	63%	66%
Education:	14% high school graduate 11% some college, no degree	24% high school graduate 11% some college, no degree

## **Severe Maternal Morbidity (SMM)**

"Severe maternal morbidity can be thought of as unintended outcomes of the process of labor and delivery that result in significant short-term or longterm consequences to a woman's health."



#### SMM by Method of Delivery, New York State, 2008-2014



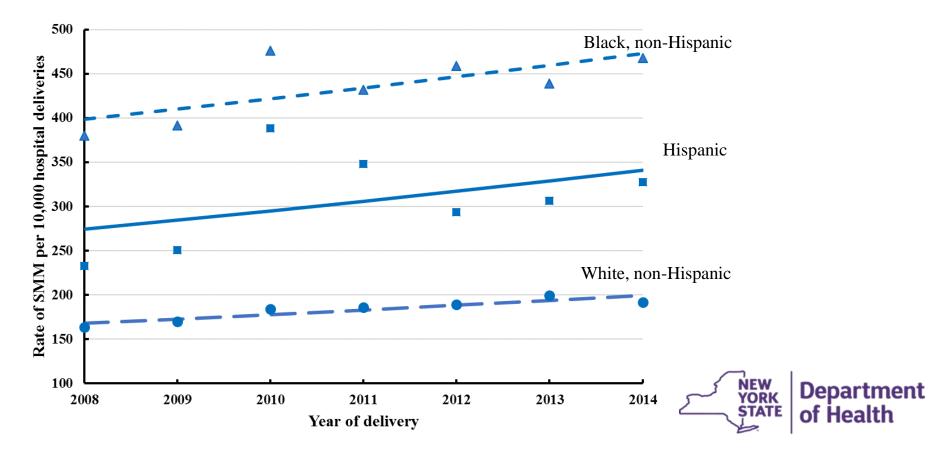


### **SMM** and Race/Ethnicity

- 15% of live births are born to Black, non-Hispanic mothers.
  - 27% of women experiencing SMM during delivery are Black, non-Hispanic
- 23% of live births are born to Hispanic mothers
  - 29% of women with SMM during delivery are Hispanic
  - Black non-Hispanic women more likely to experience SMM during delivery
    - Most of the disparity is among cesarean births



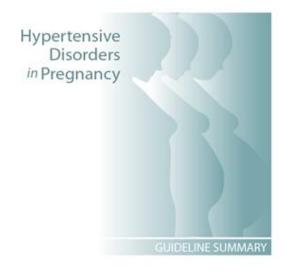
### SMM by Race/Ethnicity, New York State, 2008-2014



## **Action**



### NYS MMR Translation to Action



- Hypertensive Disorders in Pregnancy Guideline Summary released in 2013
- Posted on NYSDOH and NYSPQC websites and widely disseminated to hospitals across state

New York State Department of Health

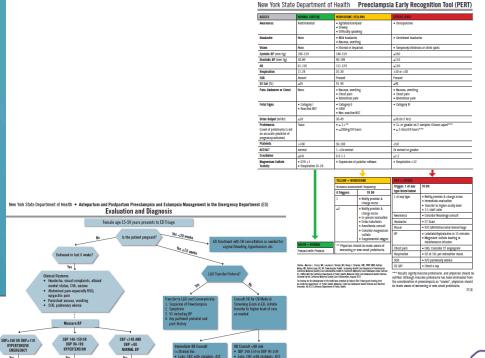
May 2013

http://www.health.ny.gov/professionals/patients/women.htm NEW YORK STATE Of Health

June 27, 2018

#### **Resources Developed from Guidelines**





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SBP>160 or DBP>110 than initiate anti-hypertensives an

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protein, UA, LDH & uric acid

altered mental status, CVA,

SOR, aulmanany edema

SBP≥160 or DBP≥110

Labs: CBC with platelets, AST ALT.

urine die for protein, UA, LDH &

. NOTE: If natient's RP increases

to SBP≥160 or DBP≥110 then

mannesium and notify OR of

change in condition if not

. Notify OB if BP changes

Labs: CBC with platelets, AST, ALT,

nagnesium immediately per treatment guidelines

reatinine-urine din for protein.

UA, LDH & uric sold

. Labs: CBC with platelets, AST.

ALT urine die for protein, UA.

If natient's RP increases to

SBP≥160 or DBP≥110 the

magnesium and notify (IR)

If not already present of

LDH & uric acid

#### Ask Your Doctor or Midwife

#### **Preeclampsia**

#### What Is It?

Preeclampsia is a serious disease related to high blood pressure. It can happen to any pregnant woman during the second half of her pregnancy, or up to 6 weeks after delivery.

#### Risks to You

- Seizures
- Stroke
- Organ damage Death

#### Death

Risks to Your Baby

Premature birth

#### Signs of Preeclampsia











Swelling in your hands and face



Gaining more than 5 pounds (2,3 kg)

#### What Should You Do?

Call your doctor or midwife right away. Finding preeclampsia early is important for you and your baby,

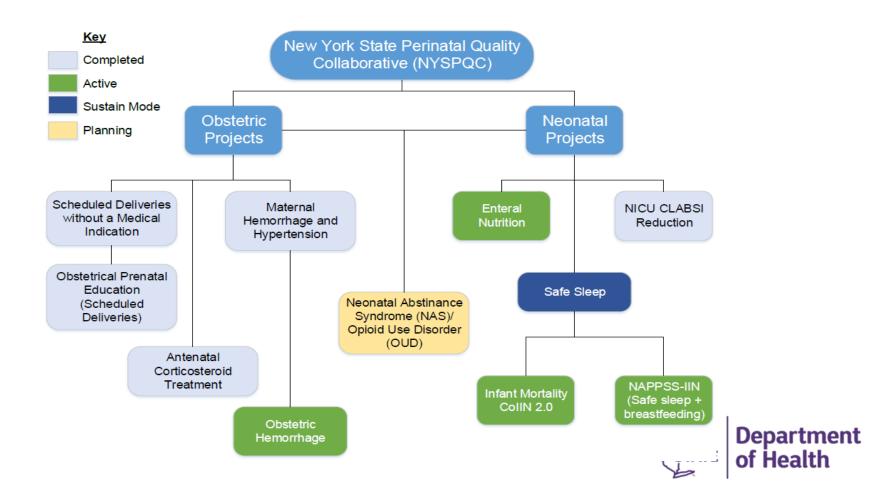
For more information go to www.preeclampsia.org

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# New York State Perinatal Quality Collaborative (NYSPQC)

The NYSPQC aims to provide the best and safest care for women and infants in NYS by collaborating with birthing hospitals, perinatal care providers, professional organizations and other key stakeholders to prevent and minimize harm through the translation of evidence-based guidelines to clinical practice.





### Partnership for Maternal Health

 Goal: promote equity in maternal health outcomes within atrisk populations, to reduce ethnic and economic disparities, and preventable maternal mortality and morbidity in NYS.

 Collaboration among public health organizations, professional societies, hospital associations, and providers



### **Promoting Well Woman Care**

- Certain medical conditions, personal behaviors, psychosocial risks, and environmental exposures associated with negative pregnancy outcomes can be identified and modified before conception through clinical interventions.
- Chronic conditions contribute to increased maternal mortality rates in NYS
- Every Woman, Every Time.
  - Discuss reproductive plans
  - Prescribe contraception, if appropriate
  - Address risk factors and chronic conditions that could compromise maternal health

June 27, 2018

### **Promoting Well Woman Care**

DOH Commissioner, Dr. Howard Zucker sent a "Dear Colleague" letter recognizing well woman care as key to improving maternal health:

- Recognized the formation of the New York State Partnership for Maternal Health
- Asked all clinicians to initiate conversations with all female patients of reproductive age: "Would you like to become pregnant within the next year?"
- Identified resources to support their practice- "Before and Beyond" CME-accredited educational modules developed by the National Preconception Health and Health Care Initiative



HOWARD A. ZUCKER, M.D., J.D.

SALLY DRESLIN, M.S., R.N. Executive Deputy Commissioner

September 9, 2016

Dear Colleague:

I am writing to provide important information about prevention of maternal mortality and morbidity and to ask you to initiate conversations with women in your care about preconception health, to improve women's health in New York State (NYS).

In November 2015, the New York State Department of Health (Department) joined with the American Congress of Obstetricians and Gynecologists District II, the New York City Department of Health and Mental Hygiene, the Healthcare Association of NYS, the Greater New York Hospital Association, and the New York Academy of Medicine, to form the New York State Partnership for Maternal Health (NYSPMH). The goal of the NYSPMH is to reduce disparities in preventable maternal mortality and morbidity in NYS by focusing on those factors that impact the health of women most at risk of poor pregnancy outcomes.

Maternal mortality and morbidity are key indicators of the health of a society. NYS ranks 46th among 50 states in maternal mortality rates, and NYS rates remain 1.5 times higher than the Healthy People 2020 objective of 11.4 maternal deaths per 100,000 live births. Despite moderate improvement, significant disparities in maternal deaths persist

Approximately 45% of births in NYS are unintended, meaning the pregnancy was mistimed, unplanned or unwanted at the time of conception. Therefore, the chance to prepare for a healthy pregnancy and have a proactive conversation with a health care provider has been lost, especially for women with chronic conditions, where preconception health management is critical. In order to address this, the NYSPMH has chosen to focus on preconception care as a starting point to reduce maternal mortality and morbidity. Preconception care is important for all women but especially for those with chronic conditions. As a provider in NYS, you play an important role in assuring the health care women receive supports their pregnancy intentions.

I am asking that you join us by initiating conversations with all female patients of reproductive age, including those being seen for well visits, and ask this one essential question: "Would you like to become pregnant within the next year?". Asking this one essential question is the responsibility of all health care providers, which include primary care and specialist providers, not just reproductive health providers. A woman's response will guide her primary and specialty care and improve her health outcomes.

Preconception care is key to improving maternal health, and is a goal of the NYS Prevention Agenda. The Prevention Agenda recognizes that women of reproductive age have an increased burden of chronic disease. This means, when they do become pregnant, they may be at a higher risk of pregnancy complications and poor health outcomes. It is imperative for providers to work with their patients and understand patients' pregnancy goals as a step toward improving maternal health. Primary care providers are well positioned to ask women whether they intend to get pregnant, assure they have the right resources to achieve their goal,

### Partnership for Maternal Health

- Currently developing a multi-pronged provider education campaign
  - Created webinar for continuing education credits on well woman care targeting all health care providers
    - Available for CMEs in Summer 2018
  - Develop educational pieces for email lists/newsletters
  - Design material for offices on pregnancy intendedness and contraception



## NYS Infant Mortality Collaborative Improvement & Innovation Network (NYS IM CollN)

Through NYS's work on the **national CollN to reduce infant mortality** (IM CollN), the NYSDOH facilitated three initiatives, which have:

- Engaged six MICHCs and three FQHCs across the state to work collaboratively on goals such as:
  - Improving birth spacing/intention by increasing adherence to the post-partum visit, and increasing selection and use of an effective contraceptive method; and
  - Improving the integration of evidence-based preconception messages into routine preventive care services.
    - Would you like to become pregnant in the next year? NEW YORK STATE of Health

### **Perinatal Regionalization**

A comprehensive, coordinated geographically structured system of care organized around a series of Regional Perinatal Centers (RPCs), each supporting and providing clinical expertise, education and quality improvement to a group of affiliate hospitals.



### **Perinatal Regionalization**

- To ensure that women and their babies will have ready access to the services they need through:
  - Ensuring access to an expert health care team
  - Ensuring high quality, comprehensive care for women and babies
  - Maximizing resources of the various facilities across the state centralizes technology
  - Allows for ongoing quality improvement to better ensure quality services across all levels of perinatal care



#### **Maternal Mortality Review Board**

- Priority of the Council on Women and Girls
- A multidisciplinary review of each maternal death
- A more complete assessment of:
  - Causes of death
  - Factors leading to death
  - Preventability
  - Opportunities for intervention
- Translate trends and issues to action
  - Collaborate to develop Issue Briefs, Grand Rounds
  - Quality improvement projects
    - Working collaboratively with partners (NYSDOH, ACOG, GNYHA, HANYS, RPCs)
  - Issue maternal mortality report

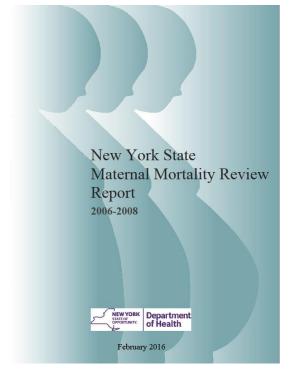


# Governor Cuomo's Initiative Maternal Mortality and Reduce Racial Disparities

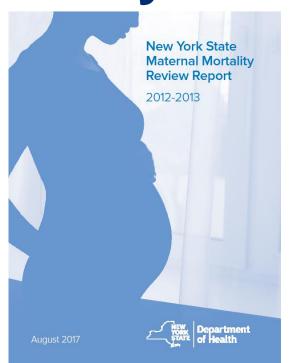
- Taskforce on Maternal Mortality and Disparate Racial Outcomes
- Establish Maternal Mortality Review Board
- Best Practice Summit with Hospitals and OB-GYNs
- Pilot the Expansion of Medicaid Coverage for Doulas
- Support Centering Pregnancy Demonstrations
- Require Continuing Medical Education and Curriculum Development
- Expand the New York State Perinatal Quality Collaborative
- Launch Commissioner Listening Sessions

Press Release April 23, 2018. Governor Cuomo Announces Comprehensive Initiative to Target Maternal Mortality and Reduce Racial Disparities in Outcomes

### **Maternal Mortality in New York**



https://www.health.ny.gov/community/adults/women/docs/maternal mortality review 2006-2008.pdf



https://www.health.ny.gov/community/adults/women/docs/maternal mortality review 2012-2013.pdf



**Department** of Health